

Remarks

The present amendment responds to the Official Action dated April 22, 2004. The Official Action rejected claims 1 and 12 under 35 U.S.C. 103(a) as being unpatentable over Murray et al. U.S. Patent No. 6,622,142 (Murray) in view of Koeppen U.S. Patent No. 5,761,667 (Koeppen). This ground for rejection is addressed below. Claims 2-5, 13-16 were rejected under 35 U.S.C. 103(a) as being upatentable over Murray in view of Koeppen and further in view of Coy et al. U.S. Patent 5,644,766 (Coy). Claims 6, 8-11, 17, 19-22 were rejected under 35 U.S.C. 103(a) as being upatentable over Murray in view of Koeppen, in view of Coy, and further in view of Pastilha et al. U.S. Patent 5,678,044 (Pastilha). Claims 7 and 18 were rejected under 35 U.S.C. 103(a) as being upatentable over Murray in view of Koeppen, in view of Coy, and further in view of Donovan et al. U.S. Patent 6,012,032 (Donovan).

In the specification, the paragraphs beginning on page 8, line 12, page 9, line 15, page 10, line 15, page 10, line 22, page 10, line 24, page 11, line 17, page 11, line 23, page 12, line 1, page 12, line 6, page 12, line 14, page 12, line 18, page 12, line 21, page 12, line 23, page 13, line 1, page 13, line 2, page 13, line 3, page 13, line 7, page 13, line 13, page 13, line 15, page 13, line 18, page 14, line 1, page 14, line 8, and page 14, line 24 have been amended to correct function and variable names by removing unnecessary capitalizations and bold face fonts and adding capitalizations and missing underscore separations that are part of a name in order to be consistent with their uses in the specification and in the drawings. The paragraph beginning on page 10, line 24 has also been amended to correct an incorrect step number. The write_out_dataset_info step 226 is amended to correct the incorrect reference number 226 to 220 to correctly reference block

220 in Fig. 2D. The paragraph beginning on page 12, line 23 has also been amended to correct an incorrect step number. The Determine_total_num_vols step 256 is amended to correct the incorrect reference number 256 to 226 to correctly reference block 226 in the amended Fig. 2L and reference page 10, line 20 in the specification.

Included in the amendment and attached are an "Annotated Sheet Showing Changes" and a "Replacement Sheet" for Figs. 2I, 2J, 2L, 2M, 2N, 2O, and 2R.

Claims 1 and 12 have been amended to be more clear and distinct. Claims 1-22 are presently pending.

The Present Invention

As discussed in the Background of the present invention, the tools known to the inventor at the time of the invention were not able to reliably provide accurate capacity information for very large databases during normal system operation. The consequence many times was having a database exceed available system storage capacity resulting in a failure of the system. It was found that in a system consisting of multiple storage devices, each having a maximum allocatable volume for data storage, when a database exceeded a single storage devices volume capacity, existing tools used by the inventor could not accurately assess the correct volume of stored data. To resolve such problems, the present invention provided techniques, such as "monitoring in normal processing system operation an order of storing a large physical sequential data file, which is an IMS OSAM dataset, spanning multiple disk storage volumes ". See the present invention claim 1 and page 6, lines 9-13. The techniques of the present invention accurately assess the

storage capacity during normal system operation and further test the discovered capacity against a threshold for determining when to report capacity warnings. A warning message is then used to proactively make changes to avoid an exceeded maximum capacity failure. As discussed in further detail below, the prior art relied upon by the Official Action does not even appear to recognize the problems addressed by the present invention much less solve them in the advantageous manner presently claimed.

The Art Rejections

All of the art rejections hinge on the application of Murray or various combinations of Murray with Koeppen, Coy, Pastilha, or Donovan. As addressed in greater detail below, the relied upon art does not support the Official Action's reading of it and the rejections based thereupon should be reconsidered and withdrawn. Further, the Applicant does not acquiesce in the analysis of the relied upon art made by the Official Action and respectfully traverses the Official Action's analysis underlying its rejections.

Murray describes a system and methods for rapid unloading and reorganization of hierarchical databases, and it is during such unloading processes that its database space calculations are made. See Murray col. 4, lines 15-17, lines 37-43, and lines 52-54, and col. 8, lines 49-62. The Official Action asserts that with regard to Fig. 3 and col. 6, lines 27-37, "... the blocks are moved into a data space ..." as part of the process of analyzing a data file. Fig. 3 is described in Murray, as "... the data space is shown in various states ... as the data is read from the database." See Murray col. 6, lines 38-41. Murray's data reading and movement of data

blocks is part of a database reorganization operation. Such a reorganization would appear to be an impractical approach to monitoring of a large database space on an ongoing basis. In any case, Murray does not address determining the size of a "a large physical sequential data file, which is an IMS OSAM dataset, spanning multiple disk storage volumes" for the purposes of knowing the data base space "in normal processing system operation" without requiring a data reorganization operation, as claimed by claim 1 as amended.

Koeppen describes another system for reorganizing a database by initially creating a map of the database that is stored in a header data structure. The header data structure includes size information of the data sets in an IMS database. The size information is obtained "Using DBDLIB, VTOC, MASTER CATALOG and standard MVS operating system facilities..." See Koeppen col. 3, lines 25-35 and lines 50-53. By asserting that by use of standard MVS operating system facilities the size of the data set(s) in the database may be determined, Koeppen indicates that he is not aware of the problems addressed by the present invention and in effect teaches away from the presently claimed invention. Koeppen does not address the problem of reliably using tools, existing at the time of the application, for space determination for datasets guaranteed space, for example, when a data file spans multiple disk storage volumes. There is no recognition of this problem in Koeppen and, consequently, Koeppen provides no description of methods for resolving this problem that has been identified and resolved by the present invention.

Assuming, *arguendo*, one could or would combine the data base reorganization system of Murray with the data base reorganization system of Koeppen, a new data base reorganization system could result. This new data base reorganization system would inherit the limitations of

Murray and Koeppen and therefore would not address the problem with data base size determination for large data sets that span multiple disk storage volumes, since neither Murray nor Koeppen teaches or suggests the claimed methods and apparatus.

Coy describes another database reorganization system and method that rearranges data based on spatial and temporal locality of usage of data files when moving data files within a storage hierarchy. Data files are moved within a storage hierarchy to optimize costs associated with archiving and retrieving related files on various cost storage devices. In Coy, the size of data files is one aspect of meta data collected on the files and may be approximated. See Coy col. 6, lines 19-23 and col. 8, lines 36-41 and lines 58-63. This use of approximate, estimated, and guessed at sizes and capacities indicates an accurate knowledge of a data base size is not an important aspect of Coy's system. Consequently, it appears Coy does not recognize inaccuracies in data sizes obtained through standard tools and possibly does not care within certain limits. Additionally, the problems being addressed by Coy concern the movement of related data files within a storage hierarchy and the techniques of resolution of these problems are distinctly different from the claimed aspects of the methods and apparatus of the present invention.

Pastilha describes a system for moving software and its associated files from a system where the software is in operation to a new system where the software is to operate in the future. The system running the software is considered to be hosting the software and the process of moving the software to a new system is considered a rehosting of the software. Pastilha describes a system and methods for accomplishing such rehosting by use of a discovery tool that assesses the software and computing environment. The discovery tool makes use of system facilities and

tools in assessing the software and computing environment, including lists of files used by the software. In the Official Action, statements are made concerning the subroutines SUBLISTC and IEHLISTR. An objection is taken to the Official Action assertion that a SUBLISTC command is a command similar to LISTCAT and that IEHLISTR subroutine is similar to the IEHLIST utility. To be exact, SUBLISTC and IEHLISTR are subroutines of the present invention and not used in Pastilha, nor should they be confused with LISTCAT or IEHLIST. Pastilha does describe the creation of a JCL job that uses an IEHLIST utility to access space utilization information from the hosting system. See Pastilha col. 6 lines 28-40. The mere mention of the use of the utility IEHLIST and similarly the use of a control statement LISTCAT does not indicate a recognition of the problems addressed by the present invention. Further, Pastilha indicates that this JCL job gathers information on data sets and a data set resides on a single volume. See Pastilha col. 6, lines 36-38. Thus, Pastilha does not describe any steps used to determine space utilization for datasets guaranteed space, for example, when a data file spans multiple disk storage volumes. The present invention includes a recognition by the inventor that the use of standard tools for determining space utilization, when a data file spans multiple disk storage volumes, can be unreliable.

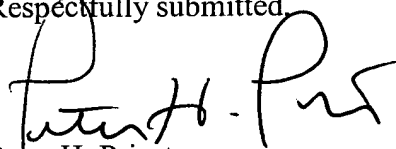
Donovan describes a system and method for accounting for computer data storage utilization that uses standard utility software to determine data set size and a number of access retrieval characteristics. See Donovan col. 3, lines 1-37. No mention of the unreliability of using standard tools for large data sets that span multiple disk storage volumes is mentioned by Donovan. Donovan does not teach and does not make obvious the present claims.

By contrast, the present invention, among its several aspects, addresses both problems of reliability and accuracy of using standard tools for large physical sequential data files that span multiple disk storage volumes. See the disclosure of the present invention at page 1, lines 19-24, page 5, lines 16 through page 6, line 8 for example. To address such problems standard IMS OSAM software is modified as taught by the present invention. In one aspect of the present invention, an advantageous method and apparatus is described for "monitoring in normal processing system operation an order of storing a large physical sequential data file, which is an IMS OSAM dataset, spanning multiple disk storage volumes" to determine whether a database space threshold will be exceeded and automatically providing notification of such an event. In another aspect of the present invention, advantageous methods and apparatus are described for "adjusting the storage space measure to full on an allocatable volume when the volume of storage space of said file exceeds the allocatable volume space on a logic device". See the present invention claim 1 and page 2 lines 8-13.

Conclusion

In closing, the cited references lack a recognition of the problems advantageously addressed by the present invention. Further, the cited references do not teach and do not suggest methods and apparatus which solve the problems addressed by the present invention as presently claimed. To sum up, the claims as presently amended are not taught, are not inherent, and are not obvious in light of the art relied upon. All of the claims appearing to be in order for allowance, prompt allowance of the claims is requested.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Peter H. Priest", with a stylized flourish at the end.

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